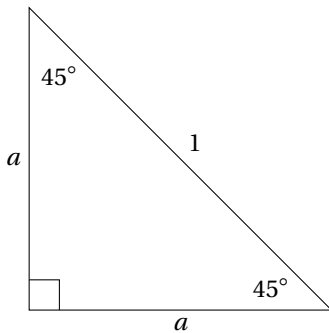
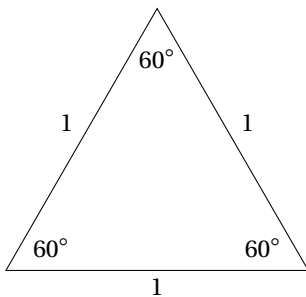


Worksheet: $45^\circ - 45^\circ - 90^\circ$ triangle and $30^\circ - 60^\circ - 90^\circ$ triangle

1. For the $45^\circ - 45^\circ - 90^\circ$ triangle, (the isosceles right triangle), there are two legs of length a and the hypotenuse of length 1.



- Use the Pythagorean Theorem to write an equation relating the lengths of the sides of the triangle.
 - Solve the equation for a . (Note: Only the positive answer will make sense.)
2. To find the lengths of the legs of the $30^\circ - 60^\circ - 90^\circ$ triangle, begin with an equilateral triangle, all of whose sides are length 1.



- From the top vertex, draw a line segment perpendicular to the bottom side, cutting the original triangle into two congruent triangles. (Geometry review: The new line segment is called the perpendicular bisector, it is also called the median, it is also called the altitude.)
 - Find the lengths of the two halves of the bottom side.
 - Find all the angles in the triangles.
 - Label the length of the altitude h
 - Use the Pythagorean Theorem to write an equation involving h
 - Solve the equation for h .
3. Draw the $30^\circ - 60^\circ - 90^\circ$ triangle in as many orientations as possible, keeping the legs either horizontal or vertical. (Hint: You can rotate and reflect the triangle)
4. Draw the $45^\circ - 45^\circ - 90^\circ$ triangle in as many orientations as possible, keeping the legs either horizontal or vertical.